Resources

<Presenter>

Resources

General Resources

- ASHRAE (http:\\www.ashrae.org)
  - Technical Committee (TC) 9.9 Mission Critical Facilities http://tc99.ashraetcs.org/
  - Design Considerations for Datacom Equipment Centers
  - Datacom Equipment Power Trends and Cooling Applications
  - Thermal Guidelines for Data Processing Environments
  - Additional Guidelines in Development (1/2007)
    - TCO and Energy Efficiency
    - High Density Data Centers
    - Liquid Cooling
    - Filtration
    - Structural

General Resources

- LBNL High Performance Buildings for High-Tech Industries (http://hightech.lbl.gov/datacenters.html)
- PG&E CoolTools™ Chilled Water Plant Design Guide (http://taylor-engineering.com/publications/design_guides.shtml)
- LBNL High Performance Datacenters, A Design Guidelines Sourcebook (http://hightech.lbl.gov/documents/DATA_CENTERS/06_DataCenters-PGE.pdf)
- Electrostatic Discharge Association (http://www.esda.org/)
- Uptime Institute (http://www.upsite.com/TUIpages/tuihome.html)
- Green Grid (http://www.thegreengrid.org/home)
- EPA/Energy Star (http://www.energystar.gov/index.cfm?c=prod_development.server_efficiency)

Control Resources

- DDC Online (http://www.ddc-online.org)
- AutomatedBuildings (http://www.automatedbuildings.com/). This site is an e-zine on building automation and controls.
- ASHRAE Guideline 13-2000, —Specifying Direct Digital Control System.”
- Control Spec Builder an on-line resource for developing control specifications (http://www.CtrlSpecBuilder.com)
- National Building Controls Information Program (NBCIP, http://www.buildingcontrols.org/)

Control/Commissioning Resources

- CSU Control and CX Guidelines (http://www.calstate.edu/cpdc/ae/guidelines.shtml)
- California Commissioning Collaborative (CaCx, http://www.cacx.org)

Cooling Plant Resources

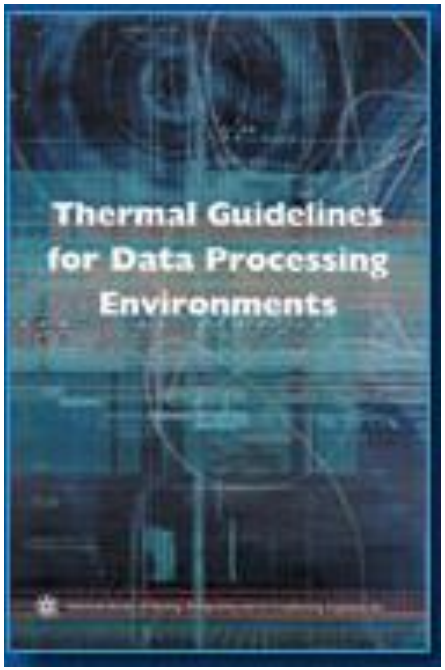
- For copies of referenced articles and the CoolTools Guide go to:
  - http://www.taylor-engineering.com/publications/design_guides.shtml
  - http://www.taylor-engineering.com/publications/articles.shtml
- Taylor, S., PE; Dupont, P.; Jones, B.; Hartman, T; Hydeman, M., PE CoolTools Report CT-016 May 2000. CoolTools™ Chilled Water Plant Design and Specification Guide
- Taylor, S., PE; Stein, J, PE. October 2002. Balancing Variable Flow Hydronic Systems. ASHRAE Journal, Atlanta GA.
- Hydeman, M., PE; Webb, N.; Sreedharan, P., PhD; Blanc, S. Development and Testing of a Reformulated Regression Based Electric Chiller Model. ASHRAE, Atlanta GA. HI-02-18-02.
- Taylor, S., PE February 2002. Primary-Only vs. Primary-Secondary Variable Flow Systems. ASHRAE Journal, Atlanta GA.
- Hydeman, M., PE; Gillespie, K. January 2002. Tools and Techniques to Calibrate Electric Chiller Component Models. ASHRAE, Atlanta GA. AC-02-09

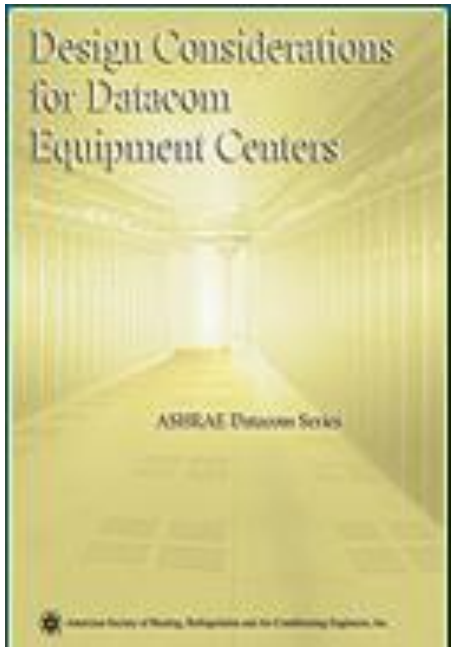
Cooling Plant Resources

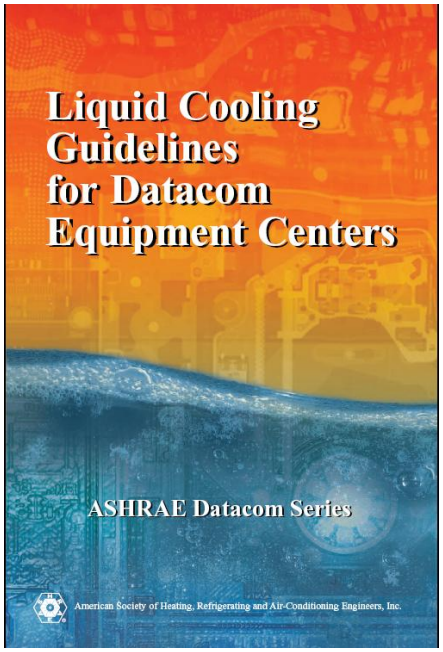
- Jiang, W.; Reddy, T.A., PhD. Reevaluation of the Gordon-Ng Performance Models for Water-Cooled Chillers, ASHRAE, Atlanta GA. January 2003 (ASHRAE symposium paper, not on our website).
- Taylor, S., PE January 2002. Degrading Chilled Water Plant Delta-T: Causes and Mitigation, ASHRAE, Atlanta GA. AC-02-06
- Hydeman, M., PE; Taylor, S., PE; Winiarski, D. January 2002. Application of Component Models for Standards Development . ASHRAE, Atlanta GA. AC-02-09
- Kammerud, R., PhD, PE; Gillespie, K.; and Hydeman, M., PE. June 1999. Economic Uncertainties in Chilled Water System Design. ASHRAE, Atlanta GA. SE-99-16-3
- Hydeman, M., PE; Taylor, S., PE; Speck, C., PE; and Gillespie, K. May 1999. Commissioning Tools & Techniques Used in a Large Chilled Water Plant Optimization Project. Proceedings of the 7Th National Conference on Building Commissioning. PECI, Portland Oregon.
- Burt Rishel's Pump Manual (this is not posted on our website!)

ASHRAE guidelines

Four books published—
more in preparation







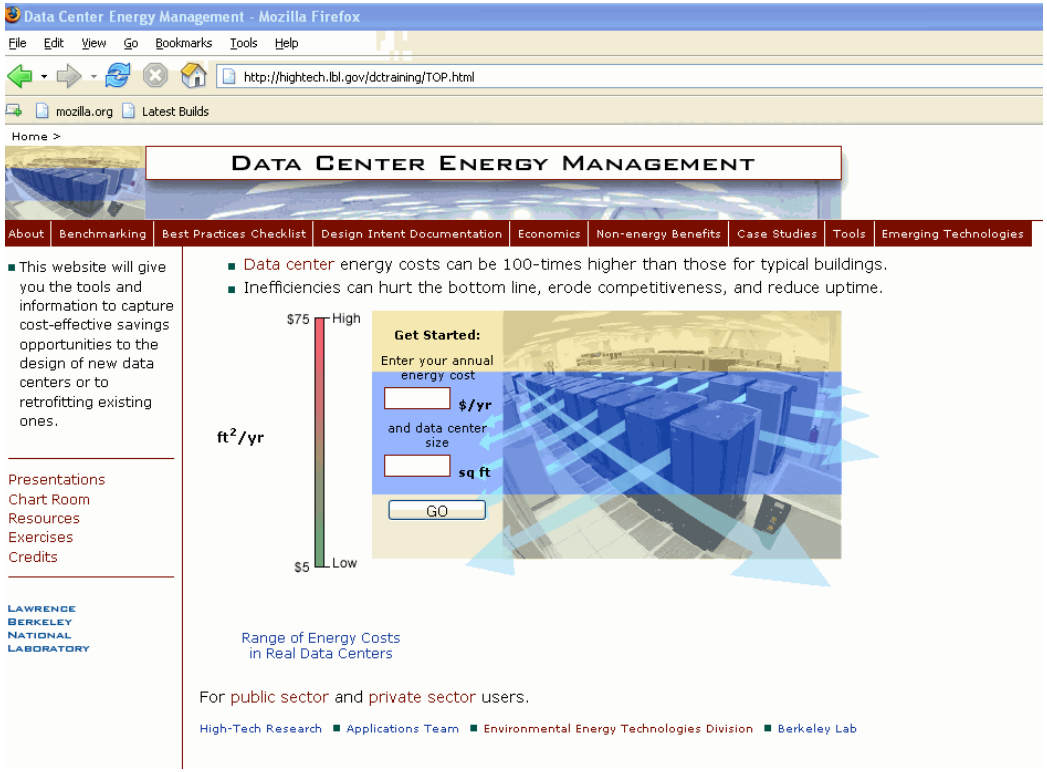
ASHRAE, Thermal Guidelines for Data Processing Environments, 2004, Datacom Equipment Power Trends and Cooling Applications, 2005, Design Considerations for Datacom Equipment Centers, 2005, Liquid Cooling Guidelines for Datacom Equipment Centers, 2006, © American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., www.ashrae.org

Order from http://tc99.ashraetcs.org/

Websites at Lawrence Berkeley National Laboratory:

http://hightech.lbl.gov/datacenters/

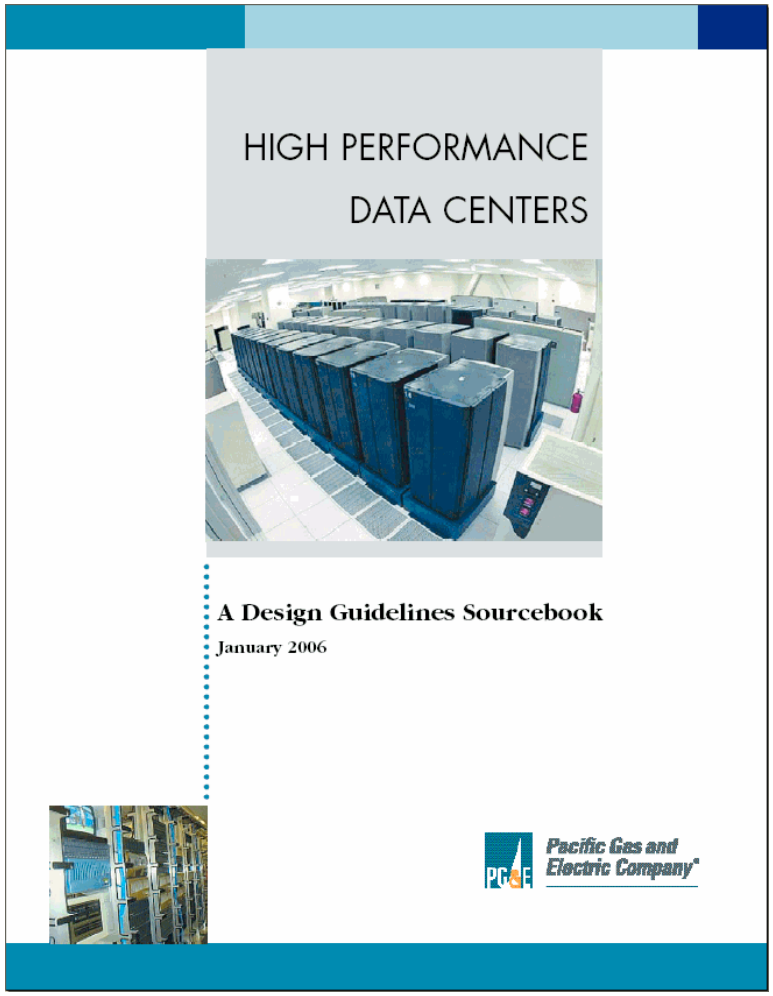
http://hightech.lbl.gov/DCTraining



Design Guidelines for Ten Best Practices Were Developed

Guides available through PG&E's Energy Design Resources Website

Website at PG&E:
www.pge.com/hightech



The Green Grid:
http://www.thegreengrid.org/gg_content/

Southern California Edison (SCE) Incentive Programs

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

pier
PUBLIC INTEREST ENERGY RESEARCH
"Research Powers the Future"

Other Training Opportunities for UC & CSU Design, Construction and Building Maintenance Staff:

Go to the website for the:

Higher Education Energy Efficiency Partnership

www.uccsuiouee.org

Select Training & Education on the menu

Resources

Server System Infrastructure
Managing Component Interfaces

- www.ssiforums.org
- www.80plus.org

80 PLUS